

ABSTRACT OF THE DISCLOSURE

An integrated optical capillary electrophoresis system for analyzing an analyte. A modulated optical pump beam impinges on an capillary containing the analyte/buffer solution which is separated by electrophoresis. The thermally-induced change in the index of refraction of light in said electrophoresis capillary is monitored using an integrated micro-interferometer. The interferometer includes a first interferometer arm intersecting the electrophoresis capillary proximate the excitation beam and a second, reference interferometer arm. Changes in index of refraction in the analyte measured by interrogating the interferometer state using white light interferometry and a phase-generated carrier demodulation technique. Background thermo-optical activity in the buffer solution is cancelled by splitting the pump beam and exciting pure buffer solution in a second section of capillary where it crosses the reference arm of the interferometer.

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